

# SHOSHONE BASE CAMP (PWSNO 1400073) SOURCE WATER ASSESSMENT REPORT

---

March 18, 2003



## State of Idaho Department of Environmental Quality

**Disclaimer:** This publication has been developed as part of an informational service for the source water assessments of public water systems in Idaho and is based on data available at the time and the professional judgement of the staff. Although reasonable efforts have been made to present accurate information, no guarantees, including expressed or implied warranties of any kind, are made with respect to this publication by the State of Idaho or any of its agencies, employees, or agents, who also assume no legal responsibility for the accuracy of presentations, comments, or other information in this publication. The assessment is subject to modification if new data is produced.

## SOURCE WATER ASSESSMENT FOR SHOSHONE BASE CAMP

Under the Federal Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency (EPA) to assess every source of public drinking water for its relative sensitivity to contaminants regulated by the Act. The Department of Environmental Quality is completing the assessments for all Idaho public drinking water systems. The assessment for your drinking water source is based on well construction characteristics; site specific sensitivity factors associated with the aquifer the water is drawn from; a land use inventory inside the well recharge zone; and water quality history. For non-community transient water systems like Shoshone Base Camp, recharge zones were generally delineated as a 1000-foot fixed radius around the wells.

This report, *Source Water Assessment for Shoshone Base Camp* describes factors used to assess susceptibility to contamination. The analysis relies on information from the well log; an inventory of land use inside the delineation boundaries, well site characteristics, potential contaminant sites identified through a Geographic Information System database search; and information from the public water system file. The ground water susceptibility analysis worksheet for Shoshone Base Camp is attached.

Taken into account with local knowledge and concerns, this assessment should be used as a planning tool to develop and implement appropriate protection measures for this system. **The results should not be used as an absolute measure of risk and are not intended to undermine the confidence in your water system.**

### **Well Construction.**

The Shoshone Base Camp water system serves a church camp and retreat center operated by Inland Northwest Lutheran Outdoor Ministries. The camp, formerly a US Forest Service work center, is located about 8 miles north of Prichard, Idaho. Drinking Water is supplied by a 24-foot deep cased well on the north side of the camp. Extending 51 inches above the floor of a well pit, the 6-inch steel casing penetrates 14 feet of coarse alluvial material, then a 7-foot deep impervious clay layer before terminating in a water-bearing seam of sand and gravel 22 feet below the surface. The static water level is 5.5 feet below land surface. Information about the depth and composition of the surface seal is not included on the well log. When tested at the time of drilling, the well discharged 65 gallons per minute over a 45 minute period with a 6 inch drawdown.

### **Well Site Characteristics.**

Hydrologic sensitivity scores reflect natural geologic conditions at the well site and in the recharge zone. Information for this part of the analysis is derived from individual well logs and from the soil drainage classification inside the delineation boundaries. 4 points out of 6 points possible were marked against the Shoshone Base Camp well in this portion of the analysis.

Soils covering the recharge zone delineated for Shoshone Base Camp are poorly drained to moderately well drained. Soils in this classification are more protective of the ground water than soils that drain rapidly. At the well site, sand, gravel and boulders dominate the soil column above the water table. The well is about 140 feet from Shoshone Creek, and needs to be tested to determine whether it is surface water influenced.

### **Potential Contaminant Inventory.**

Land inside the protection zone for Shoshone Base Camp is mostly undeveloped forest. Potential sources of contamination inside the 1000-foot radius delineated around the well include surface water, and the camp. Garbage from the camp was formerly buried on the hill west of well. Microbial contamination is the primary concern with surface water. Camps can be sources of septage, petroleum products, and hazardous materials used for maintenance.

### **Water Quality History.**

The Shoshone Base Camp well has a good water quality sampling history. In the period from January 1998 through October quarterly samples were positive for total coliform bacteria in September 1998 and May 2001. The 2001 incident was attributed to a break in the distribution system and malfunctioning of the chlorinator. Total coliform bacteria were absent from samples tested in intervening quarters. Annual tests for nitrates show concentrations ranging from undetectable levels to 0.108 mg/l. The Maximum Contaminant Level for nitrate is 10 mg/l.

### **Susceptibility to Contamination.**

An analysis of the Shoshone Base Camp well, incorporating information from the public water system file, and the potential contaminant inventory, ranked the well moderately susceptible to all classes of regulated contaminants. The shallowness of the well and other risk factors related to local geology added the most points to the final susceptibility scores. The complete ground water susceptibility work sheet for your system is on page 6 of this report. Formulas used to compute final scores and susceptibility rankings are at the bottom of the worksheet.

### **Source Water Protection.**

This assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what ranking a source receives, protection is always important. Whether the source is currently located in a “pristine” area or an area with numerous industrial and/or agricultural land uses, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

Continuing to operate and maintain the well in compliance with the *Idaho Rules for Public Drinking Water Systems* is the best drinking water protection tool available to Shoshone Base Camp. Improvements to the well outlined in August 2000 sanitary survey included installation of a vented well cap; raising the well house floor, surfacing it with poured concrete and draining the floor to daylight; fitting the hose bib in the well house with an atmospheric vacuum breaker. Improvements related to disinfecting the water included maintaining the proper free chlorine residual, and testing and recording the residual daily when the system is in operation. The camp also needs to perform the necessary testing to determine whether the well is influenced by surface water. Correspondence in the public water system file for Shoshone Base Camp does not indicate whether the work has been done.

There are a number of voluntary well protection measures Shoshone Base Camp should also consider. The system should look into ground water stewardship programs like Home\*A\*Syst on the web or by phone (608) 262-0024. These programs are designed to help well owners assess everyday activities for their potential impact on drinking water quality. Topics include septic system maintenance, petroleum product storage, handling and storing lawn and household chemicals and similar activities.

Every water system should develop an emergency response plan. There is a simple fill-in-the-blanks form available on the DEQ website to guide systems through the emergency planning process.

Due to the time involved with the movement of ground water, drinking water protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term.

### **Assistance.**

Public water suppliers and users may call the following IDEQ offices with questions about this assessment and to request help with drinking water protection planning.

Coeur d'Alene Regional DEQ Office (208) 769-1422

State IDEQ Office (208) 373-0502

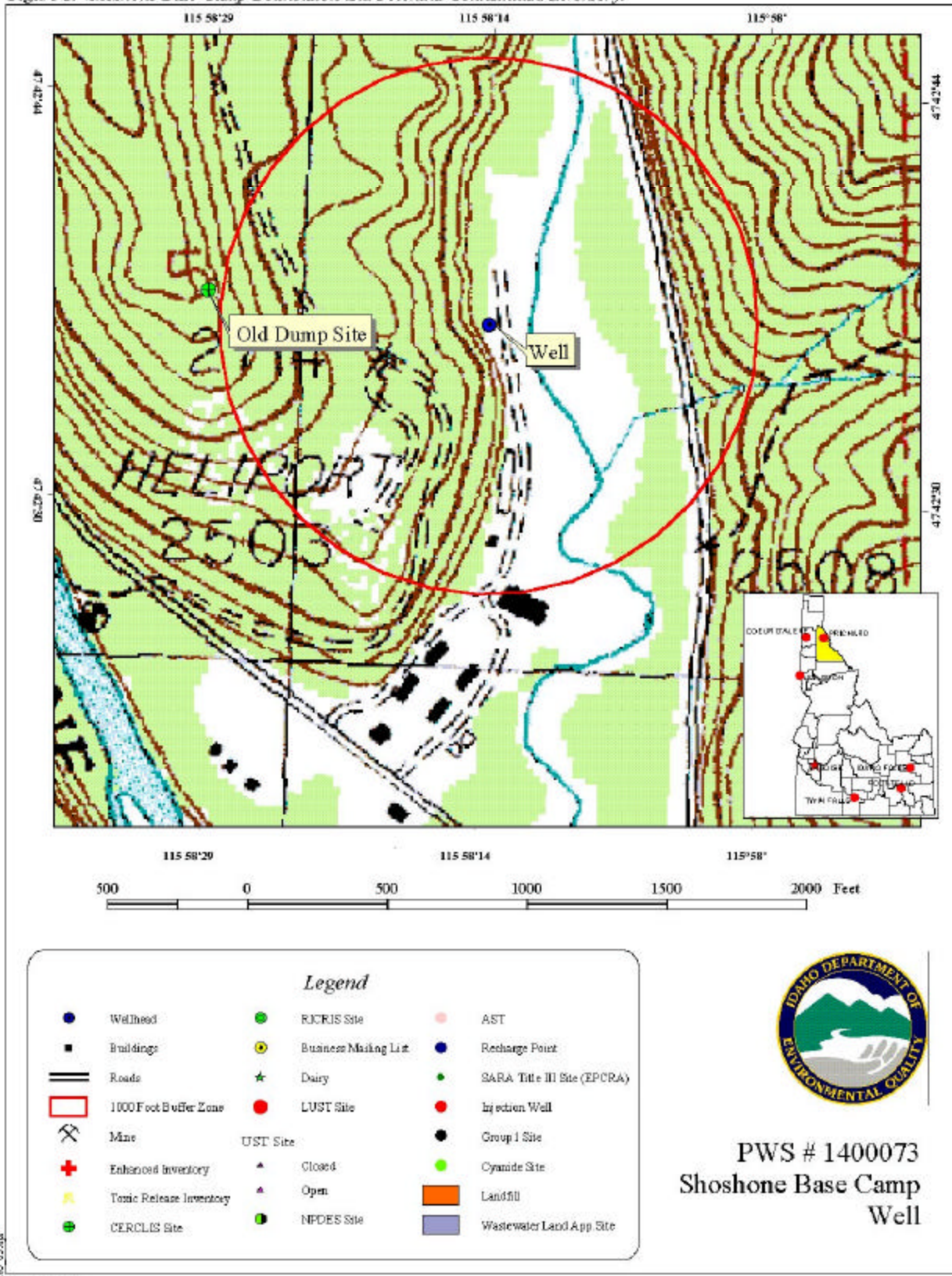
DEQ Website: [www.deq.state.id.us](http://www.deq.state.id.us)

Water suppliers serving fewer than 10,000 persons may contact Melinda Harper of the Idaho Rural Water Association (208) 343-7001 for assistance with drinking water protection strategies.

Idaho Rural Water Association Website: [www.idahoruralwater.com](http://www.idahoruralwater.com)

Home \* A \* Syst Website: [www.uwex.edu/homeasyst](http://www.uwex.edu/homeasyst)

Figure 1. Shoshone Base Camp Delineation and Potential Contaminant Inventory.



Feb 03.gpr

February 18, 2003

**Ground Water Susceptibility**

Public Water System Name : **SHOSHONE BASE CAMP**  
 Public Water System Number : **1400073**

Well # : **WELL #1**  
 2/18/03 8:34:44 AM

<b>1. System Construction</b>		<b>SCORE</b>			
Drill Date	9/27/57				
Driller Log Available	YES				
Sanitary Survey (if yes, indicate date of last survey)	YES 2000				
Well meets IDWR construction standards	NO	1			
Wellhead and surface seal maintained	YES	0			
Casing and annular seal extend to low permeability unit	Casing Yes, Seal unknown	1			
Highest production 100 feet below static water level	NO	1			
Well located outside the 100 year flood plain	YES	0			
<b>Total System Construction Score</b>		<b>3</b>			
<b>2. Hydrologic Sensitivity</b>					
Soils are poorly to moderately drained	YES	0			
Vadose zone composed of gravel, fractured rock or unknown	YES	1			
Depth to first water > 300 feet	NO	1			
Aquitard present with > 50 feet cumulative thickness	NO	2			
<b>Total Hydrologic Score</b>		<b>4</b>			
<b>3. Potential Contaminant / Land Use</b>		IOC	VOC	SOC	Microbial
		Score	Score	Score	Score
Land Use Zone	WOODLAND	0	0	0	0
Farm chemical use high	NO	0	0	0	
IOC, VOC, SOC, or Microbial sources in Sanitary Setback	NO	NO	NO	NO	NO
<b>Potential Contaminant Source/Land Use Score</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Potential Contaminant / Land Use - 1000-Foot Radius</b>					
Contaminant sources present (Number of Sources)	Surface Water, Camp facilities	1	1	1	2
(Score = # Sources X 2 ) 8 Points Maximum		2	2	2	4
Sources of Class II or III leacheable contaminants or Microbials	YES	1	1	1	
4 Points Maximum		1	1	1	
1000-Foot Radius contains or intercepts a Group 1 Area	NO	0	0	0	0
Land use 1000-Foot Radius	Less Than 25% Agricultural Land	0	0	0	0
<b>Total Potential Contaminant Source / Land Use Score - 1000-Foot Radius</b>		<b>3</b>	<b>3</b>	<b>3</b>	<b>4</b>
<b>Cumulative Potential Contaminant / Land Use Score</b>		<b>3</b>	<b>3</b>	<b>3</b>	<b>4</b>
<b>4. Final Susceptibility Source Score</b>		<b>8</b>	<b>8</b>	<b>8</b>	<b>9</b>
<b>5. Final Well Ranking</b>		Moderate	Moderate	Moderate	Moderate

The final scores for the susceptibility analysis were determined using the following formulas:

- 1) VOC/SOC/IOC Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.27)
- 2) Microbial Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.35)

**Final Susceptibility Ranking:**

0 - 5 Low Susceptibility  
 6 - 12 Moderate Susceptibility  
 > 13 High Susceptibility

## POTENTIAL CONTAMINANT INVENTORY LIST OF ACRONYMS AND DEFINITIONS

**AST (Aboveground Storage Tanks)** – Sites with aboveground storage tanks.

**Business Mailing List** – This list contains potential contaminant sites identified through a yellow pages database search of standard industry codes (SIC).

**CERCLIS** – This includes sites considered for listing under the **Comprehensive Environmental Response Compensation and Liability Act (CERCLA)**. CERCLA, more commonly known as ? Superfund? is designed to clean up hazardous waste sites that are on the national priority list (NPL).

**Cyanide Site** – DEQ permitted and known historical sites/facilities using cyanide.

**Dairy** – Sites included in the primary contaminant source inventory represent those facilities regulated by Idaho State Department of Agriculture (ISDA) and may range from a few head to several thousand head of milking cows.

**Deep Injection Well** – Injection wells regulated under the Idaho Department of Water Resources generally for the disposal of stormwater runoff or agricultural field drainage.

**Enhanced Inventory** – Enhanced inventory locations are potential contaminant source sites added by the water system. These can include new sites not captured during the primary contaminant inventory, or corrected locations for sites not properly located during the primary contaminant inventory. Enhanced inventory sites can also include miscellaneous sites added by the Idaho Department of Environmental Quality (DEQ) during the primary contaminant inventory.

**Floodplain** – This is a coverage of the 100year floodplains.

**Group 1 Sites** – These are sites that show elevated levels of contaminants and are not within the priority one areas.

**Inorganic Priority Area** – Priority one areas where greater than 25% of the wells/springs show constituents higher than primary standards or other health standards.

**Landfill** – Areas of open and closed municipal and non-municipal landfills.

**LUST (Leaking Underground Storage Tank)** – Potential contaminant source sites associated with leaking underground storage tanks as regulated under RCRA.

**Mines and Quarries** – Mines and quarries permitted through the Idaho Department of Lands.)

**Nitrate Priority Area** – Area where greater than 25% of wells/springs show nitrate values above 5mg/l.

**NPDES (National Pollutant Discharge Elimination System)** – Sites with NPDES permits. The Clean Water Act requires that any discharge of a pollutant to waters of the United States from a point source must be authorized by an NPDES permit.

**Organic Priority Areas** – These are any areas where greater than 25 % of wells/springs show levels greater than 1% of the primary standard or other health standards.

**Recharge Point** – This includes active, proposed, and possible recharge sites on the Snake River Plain.

**RICRIS** – Site regulated under **Resource Conservation Recovery Act (RCRA)**. RCRA is commonly associated with the cradle to grave management approach for generation, storage, and disposal of hazardous wastes.

**SARA Tier II (Superfund Amendments and Reauthorization Act Tier II Facilities)** – These sites store certain types and amounts of hazardous materials and must be identified under the Community Right to Know Act.

**Toxic Release Inventory (TRI)** – The toxic release inventory list was developed as part of the Emergency Planning and Community Right to Know (Community Right to Know) Act passed in 1986. The Community Right to Know Act requires the reporting of any release of a chemical found on the TRI list.

**UST (Underground Storage Tank)** – Potential contaminant source sites associated with underground storage tanks regulated as regulated under RCRA.

**Wastewater Land Applications Sites** – These are areas where the land application of municipal or industrial wastewater is permitted by DEQ.

**Wellheads** – These are drinking water well locations regulated under the Safe Drinking Water Act. They are not treated as potential contaminant sources.

**NOTE:** Many of the potential contaminant sources were located using a geocoding program where mailing addresses are used to locate a facility. Field verification of potential contaminant sources is an important element of an enhanced inventory.

Where possible, a list of potential contaminant sites unable to be located with geocoding will be provided to water systems to determine if the potential contaminant sources are located within the source water assessment area.